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10/684,087	10/12/2003	Craig M. Herzinger		3035

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EXAMINER	
AKANBI, ISIAKA O	
ART UNIT	**PAPER NUMBER**
2877	

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	**Application No.** 10/684,087	**Applicant(s)** HERZINGER, CRAIG M.	
	Examiner Isiaka O. Akanbi	**Art Unit** 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *12 October 2003*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement file 12 October 2003 has been entered and reference considered by the examiner.

Drawings

The examiner approves the drawings filed 12 October 2003.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by McAninch (6,813,026 B2).

As regard to claim 1, McAninch discloses a time efficient method of analyzing sample systems with spectroscopic electromagnetic radiation comprising wavelengths which are not absorbed by oxygen and/or water vapor and wavelengths which are absorbed by oxygen and/or water vapor comprising of the following steps:

In any functional order practicing steps a, a' and a":

a) providing a chamber which encloses a substantially enclosed space which contains oxygen and/or water vapor, to which chamber is functionally affixed a means for evacuating and/or purging said substantially enclosed space of Oxygen and/or water, and means for entering a beam of electromagnetic radiation thereinto, and a means for exiting electromagnetic radiation therefrom and a') providing a source of a spectroscopic beam electromagnetic radiation comprising wavelengths which are not absorbed by oxygen and/or water vapor and wavelengths which are absorbed by oxygen and/or water vapor and a") providing detector means of electromagnetic radiation and then proceeding to b) positioning a sample system in said substantially enclosed space and c) while causing said means for evacuating and/or purging said substantially enclosed space of oxygen and/or water vapor to evacuate or purge said substantially enclosed space of oxygen and/or water vapor, causing said source of a spectroscopic beam electromagnetic radiation to first comprise wavelengths which are not absorbed by oxygen and/or water vapor and sequentially later wavelengths which are absorbed by oxygen and/or water vapor and wavelengths and causing it to enter said means for entering a beam of electromagnetic radiation along a locus, such that it interacts with said sample system and exits said means for exiting electromagnetic radiation and enters said detector means of spectroscopic electromagnetic radiation, such that during the evacuation or purging process, while oxygen and/or water vapor is still present in said substantially enclosed space in sufficient quantity to absorb said wavelengths which are absorbed by said oxygen and/or water vapor, data is provided by said detector means for wavelengths which are not absorbed by oxygen and/or water vapor, and such that once said substantially' enclosed space is sufficiently evacuated or purged of oxygen and/or water vapor, data is provided by said detector for wavelengths which are absorbed by oxygen and/or water vapor (col. 1, line 20- 44)(col. 1, line 50-54)(col. 2, line 13-49)(figs. 1, 2 and 3).

As to claims 2 and 10, according to claim 1, McAninch discloses the sample system is characterized by a selection from the group consisting of:

being isotropic and non-depolarizing (24)(figs. 1 and 2);
being isotropic and depolarizing;
being anisotropic and non-depolarizing;
being anisotropic and depolarizing;

and in which the beam of electromagnetic radiation provided by said source means for providing of a beam including ultraviolet wavelength range electromagnetic radiation which interacts with said sample system is characterized by a selection from the group consisting of:

it simultaneously comprising multiple wavelengths, it comprises a plurality of scanned wavelengths which are sequentially scanned individually, and in which the beam of electromagnetic radiation is, just prior to said sample system caused to be characterized by a selection from the group consisting of:

unpolarized, partially polarized, randomly polarized, linearly polarized, with respect to said sample system linearly " P" polarized, with respect to said sample system linearly "s" polarized, circularly polarized and is caused to interact with a sample system via a selection from the group consisting of:

by reflection;

by transmission;

by both reflection and transmission;

at one or more angles of incidence, (AOI's), with respect to a surface thereof selected from the group consisting of normal, oblique, while said detector means is utilized to detect resulting reflected, transmitted, scattered electromagnetic radiation (figs. 1, 2 and 6)(col. 4, line 19-59).

As to claims 3 and 11, McAninch discloses electromagnetic radiation which is applied to a sample system and monitored after said sample system, are each characterized by a selection from the group consisting of non-polarized incident, with measurement of intensity out, non-polarized incident, with measurement of polarized out, polarized incident, with measurement of intensity out, polarized incident, with measurement of polarized out (col. 4, line 49-59).

As to claims 4 and 12, McAninch discloses modulation is applied during data accumulation, said modulation being of at least one selection from the group consisting of Electromagnetic Beam Magnetic "B" Field, Electromagnetic Beam Electric "E" F1eld Electromagnetic Beam Flux "E^{2}", Ambient Environment Composition, (e.g. liquid, gas), Sample System Temperature, (which can be above or below room temperature), Sample System Strain and Pressure applied to Sample System (figs. 8a-8c)(col. 3, line 3-6)(col. 5, line 1-10).

As to claims 5 and 13, McAninch discloses a polarizer means is present and in which ellipsometric PSI data is accumulated while ellipsometric DELTA is placed within a range near 90 degrees via adjustment of the angle-of-incidence of the beam of electromagnetic radiation with respect to the surface of said sample system (figs. 1 and 2)(col. 4, line 38-31)(col. 6, line 47).

As to claim 6, McAninch discloses the step of providing a source of 4 spectroscopic beam includes providing a selection from the group consisting of:

a monochromatic which is utilized to sequentially select wavelengths which are individually provided to a detector mean element after interaction with said sample system;

a dispersive element (i.e. spectrometer) is present which simultaneously provides plurality of wavelengths to separate detector means elements after interaction with said sample system (col. 4, line 1-39).

Regarding claim 7, McAninch discloses a time efficient method of analyzing sample systems with spectroscopic electromagnetic radiation comprised both of wavelengths which are not absorbed by oxygen and/or water vapor and wavelengths which are absorbed by oxygen and/or water vapor, comprising the steps of a) providing an ellipsometer or polarimeter system, comprising, in a substantially enclosed space:

a polarization state generation system comprising:

source of electromagnetic radiation comprising wavelengths in ranges which are not absorbed and are absorbed by oxygen and/or water vapor and polarization state setting means, means for placing and maintaining a sample system in a desired position and orientation (col. 1, line 20- 44)(col. 1, line 50-54)(col. 2, line 13-49)(figs. 1, 2 and 3).

at least one polarization state detector system, each of which comprising polarization state analyzer means and detector system (70) and a computing (72) means (col. 4, line 49-51)(col. 6, line 46-47).

said substantially enclosed space comprising means for purging oxygen and water vapor therefrom;

such that, during use, beam of electromagnetic radiation is produced by said source of electromagnetic radiation and caused to pass through said polarization state setting means, interact with a sample system placed on said means for placing and maintaining a sample system in a desired position and orientation, then pass through said polarization state analyzer means and enter a detector system in the pathway thereof, b) positioning a sample system on said means for placing and maintaining a sample system in a desired position and orientation, and applying said means or purging oxygen and water vapor from said substantially enclosed space so that oxygen and water vapor are gradually replaced by at least one selection from the group consisting of nitrogen and argon;

c) during said purging procedure obtaining data by monitoring wavelengths which are in the range which is not absorbed by oxygen and/or water vapor, d) once purging is sufficiently complete obtaining data by monitoring wavelengths which are in the range which is absorbed by oxygen and/or water vapor, e) in functional conjunction with the other steps proposing a parameter containing mathematical model of the sample system, and f) applying said computing means to evaluate parameters in said mathematical model which fit to said data obtained in both the wavelength range which is not and the wavelength range which is absorbed by oxygen and/or water vapor (col. 3, line 19-col. 5, line 1-10).

As to claim 8, McAninch discloses an ellipsometer or polarimeter system, involving selecting at least one detector system from the group consisting of:

photo-diode, photo-diode array, charge-coupled-device, photo-multiplier tubes, photo-resistive elements, photo-conductive elements, thermo-piles, bolemeters and having detector system distinguishing aperturing present (col. 7, line 28-30).

As to claim 9, McAninch discloses providing a an ellipsometer system, involves selecting a detector system comprising a plurality of detector elements (col. 4, line 49-51)(col. 7, line 28-30).

As to claim 14, McAninch discloses said polarization state setting means is sequentially set to at least two settings while data is obtained at each thereof (col. 4, line 54-59).

Regarding claim 15, McAninch discloses a time efficient method of analyzing a sample system using a beam of electromagnetic radiation with wavelengths in the ultraviolet wavelength range comprising the steps of:

A) providing an elllpsometer or polarimeter system for analyzing sample systems using electromagnetic radiation with wavelengths both in and out of the ultraviolet wavelength range, said elllpsometer or polarimeter system comprising a chamber means which encompasses a substantially enclosed space, functionally within said substantially enclosed space there being sequentially present:

a) source means for providing a beam of electromagnetic radiation including ultraviolet range wavelengths, b) optional polarization state setting means for setting a polarization state in at least a selected small range of wavelengths in a beam of electromagnetic radiation including ultraviolet wavelengths, c) optional means which enables sequentially modifying polarization state set by said polarization state setting means, through a plurality of polarization states, d) a. means for placing and maintaining a sample system in a desired position and orientation said means for placing and maintaining a sample system in a desired position and orientation being positioned in a subspace of said substantially enclosed space which subspace can be sequestered by a subspace sequestering means present within said substantially enclosed space, e) detector means for receiving an electromagnetic beam which is caused to interact with a sample system which is secured in place by said means for placing and maintaining a sample system in a desired position and orientation and f) computer means for analyzing data provided by said detector means for receiving an electromagnetic beam after it interacts with said sample system;

there being further present:

g) monochromator means, for selecting a small range of wavelengths in a beam including ultraviolet wavelength range electromagnetic radiation, present between said source means for providing of a beam including ultraviolet wavelength range electromagnetic radiation and said detector means for receiving an electromagnetic beam which is caused to interact with a sample system;

said chamber means having functionally affixed thereto means for causing said subspace sequestering means to become configured so as to sequester a sample system in a subspace of said substantially enclosed space, or to open and expose said sample system generally to the substantially enclosed space, and means for accessing said means for placing and maintaining a sample system in a desired position and orientation;

said chamber further having means functionally affixed thereto for entering purging gas into said substantially enclosed space generally, and to a subspace sequestered by said subspace sequestering means independently when it is caused to be sequestered from said substantially enclosed space;

such that in use a sample system is caused to be affixed to said means for placing and maintaining a sample system in a desired position and orientation via said means for accessing said means for placing and maintaining a sample system in a desired position and orientation, and

purging gas is caused .to be entered into said substantially enclosed space via said means for entering purging gas into said substantially enclosed space generally, and/or to a subspace sequestered by said subspace sequestering means independently when it is caused to be sequestered from said substantially enclosed space, and

said source means for providing of a beam including ultraviolet wavelength range electromagnetic radiation is caused to provide a beam including ultraviolet wavelength, and when present said polarization state setting means for setting a polarization state in a selected small range of wavelengths in a beam including ultraviolet wavelength range electromagnetic radiation is caused to impose a polarization state thereupon, and said monochromator means for selecting a small range of wavelengths in said beam of ultraviolet wavelength range electromagnetic radiation is caused to provide a small range of wavelengths in said beam of electromagnetic radiation which includes ultraviolet range wavelengths;

and such that said means for placing and maintaining a sample system in a desired position and orientation is caused to orient said sample system so that said beam including ultraviolet wavelength range electromagnetic radiation is caused to approach a surface thereof at a known angle of incidence;

and such that said beam including ultraviolet wavelength range electromagnetic radiation interacts with said sample system and then enters said detector;

B) via said means for causing said subspace sequestering means to become configured so as to sequester a sample system in a subspace of said substantially enclosed space, or to open and expose said sample system generally to the substantially enclosed space, entering a sample system to said subspace;

C) via said mean for entering purging gas into said substantially enclosed space generally, and to a subspace sequestered by said subspace sequestering means independently when it is caused to be sequestered from said substantially enclosed space, purging said substantially enclosed space generally, and said subspace sequestered by said subspace sequestering means in particular until the subspace sequestered by said subspace sequestering means is sufficiently purged to be substantially free of oxygen and water vapor, followed by opening said subspace sequestered by said subspace sequestering means to the substantially enclosed space generally;

D) causing said means for placing and maintaining a sample system in a desired position and orientation, to rotate said sample system so that said beam of electromagnetic radiation of a known wavelength in the ultraviolet range approaches said surface of said Sample system at a known angle-of-incidence thereto, and using said source means for providing of beam of ultraviolet wavelength range electromagnetic radiation, and monochromator means for selecting a small range of wavelengths in a beam including ultraviolet wavelength range electromagnetic radiation, and said polarization state setting means for setting a polarization state in a selected small range of wavelengths in a beam including ultraviolet wavelength range electromagnetic radiation, sequentially providing a beam of electromagnetic radiation of a known wavelength beginning outside the ultraviolet range and progressing thereinto as purging progresses;

E) intercepting said beam of electromagnetic radiation of a known wavelength beginning outside the ultraviolet range, but which progresses thereinto as purging progresses, with said detector means for receiving an electromagnetic beam after it is caused to interact with said sample system;

F) in functional combination with the other steps proposing a parameter containing mathematical model for the sample system; and

G) using said computer means for analyzing data provided by said detector means for receiving an electromagnetic beam after it interacts with said means for maintaining a sample system in a desired position and orientation, to simultaneously utilize data provided by said detector means in wavelength ranges both outside and in the ultraviolet range to evaluate parameters in said mathematical model (col. 3, line 19-col. 5, line 1-10)(col. 6, line 46-47)(col. 7, line 28-30).

As to claim 16, McAninch discloses said detector means comprising at least two detectors, one sensitive outside the ultraviolet wavelength range and another sensitive the ultraviolet wavelength range, and wherein said time efficient method further comprises sequentially first positioning said detector which is sensitive outside the ultraviolet wavelength range and then positioning said detector which is sensitive in the ultraviolet wavelength range to intercept said electromagnetic beam after it interacts with said sample system (col. 4, line 1-col. 5, line 1-67).

17. A time efficient method as in Claim 15, in which said detector means comprises at least one detector which comprises a plurality of detector elements, in functional combination with dispersive (i.e. spectrometer) means for directing different wavelengths into different of said detector elements (col. 4, line 1-59).

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art time efficient method of analyzing sample systems with spectroscopic electromagnetic radiation that may anticipate or obviate the claims of the applicant's invention.

Conclusion

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi
February 15, 2006

Gregory J. Toatley, Jr.
Supervisory Patent Examiner
17-Feb-06